

THAT WHICH IS CLAIMED IS:

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1. A thick film millimeter wave transceiver module comprising:
- base plate;
 - a multi-layer substrate board having a
 - 5 plurality of layers of low temperature transfer tape and received on said base plate, said layers comprising at least one of
 - a DC signals layer having signal tracks and connections;
 - 10 a ground layer having ground connections;
 - a device layer having capacitors and resistors embedded therein;
 - a top layer having cutouts for receiving
 - 15 MMIC chips therein;
 - a solder preform layer located between said device layer and said top layer for securing any MMIC chips; and
 - a channelization plate received over the
 - 20 multi-layer substrate board and having channels formed to receive MMIC chips and provide isolation between transmit and receive signals.

2. A thick film millimeter wave transceiver module according to Claim 1, and further comprising isolation vias which extend through multiple layers down to the ground layer.

3. A thick film millimeter wave transceiver module according to Claim 1, and further comprising a radio frequency cover received over said channelization plate.

4. A thick film millimeter wave transceiver module according to Claim 1, wherein each of said layers within said multi-layer substrate board is about 2 to about 4 mil thick.

5. A thick film millimeter wave transceiver module according to Claim 4, wherein said layers are about 3 mil thick.

6. A thick film millimeter wave transceiver module according to Claim 5, wherein said top layer is about 4 mil thick.

7. A thick film millimeter wave transceiver module according to Claim 1, wherein said base plate is formed from a CTE matched material.

8. A thick film millimeter wave transceiver module according to Claim 1, wherein said base plate is about 0.1 to about 0.3 inches thick.

9. A thick film millimeter wave transceiver module according to Claim 8, wherein said base plate is about 0.125 inches thick.

10. A multi-layer thick film substrate board used in transceiver modules comprising:

a plurality of low temperature transfer tape layers, said layers comprising one of at least:

a DC signals layer having DC signal tracks and connections;

a ground layer having ground connections;

a device layer having capacitors and resistors embedded therein;

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11. A multi-layer thick film substrate board according to Claim 10, and further comprising isolation vias which extend through multiple layers down to the ground layer.

wherein each of said layers within said multi-layer substrate board is about 1 to about 4 mil thick.

13. A substrate board according to Claim 12, wherein said layers are about 3 mil thick.

14. A substrate board according to Claim 10, wherein said top layer is about 4 mil thick.

15. A substrate board according to Claim 10, wherein said base plate is formed from a CTE matched material.

16. A thick film millimeter wave transceiver module comprising:

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base\plate;
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~~a DC signals layer having DC signal tracks and connections;~~

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~~a ground layer having ground connections;~~

at least one MMIC chip received on the

a channelization plate received over the multi-layer substrate board and having channels receive MMIC chips and provide isolation

20 between transmit and receive signals.

17. A thick film millimeter wave transceiver module according to Claim 16, and further comprising isolation vias which extend through multiple layers down to the ground layer.

18. A thick film millimeter wave transceiver module according to Claim 16, and further comprising a solder preform layer for securing the at least one MMIC to said substrate board.

19. A thick film millimeter wave transceiver module according to Claim 16, and further comprising a silver epoxy securing the at least one MMIC to the substrate board.

20. A thick film millimeter wave transceiver module according to Claim 16, and further comprising a radio frequency cover received over said channelization plate.

21. A thick film millimeter wave transceiver module according to Claim 16, wherein each of said

layers within said multi-layer substrate board is about 2 to about 4 mil thick.

22. A thick film millimeter wave transceiver module according to Claim 21, wherein said layers are about 3 mil thick.

23. A thick film millimeter wave transceiver module according to Claim 16, wherein said base plate is formed from a CTE matched material.

24. A thick film millimeter wave transceiver module according to Claim 23, wherein said base plate is about 0.1 to about 0.3 inches thick.

25. A thick film millimeter wave transceiver module according to Claim 24, wherein said base plate is about 0.125 inches thick.

26. A method of forming a thick film millimeter wave transceiver module comprising the steps of:

forming a base plate;

forming a multi-layer substrate board having a plurality of layers of low temperature transfer tape; receiving the substrate board on the base plate, wherein the substrate board comprises one of at least

a DC signals layer having signal tracks and connections;

a ground layer having ground connections;

a device layer having capacitors and resistors embedded therein;

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